DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

Bay Area Branch
690 Walnut Ave.St. 150
Vallejo, CA 94592-1133
(707) 649-5453
(707) 649-5493

Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 69.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-002770
Date Inspected: 02-Jun-2008

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island

OSM Arrival Time: 630
OSM Departure Time: 1530
Location: Shanghai, China

CWI Name: Ye Yong Jun and Shazhi

Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**CWI Present:**	☑ Yes	☐ No	
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ Yes	☐ No	☐ N/A
				Approved WPS:	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: OBG abd SAS Tower Fabrication

Summary of Items Observed:

On this date, Caltrans Office of Structural Material (OSM) Quality Assurance (QA) Inspector Joselito Lizardo was present as requested to perform observations on the fabrication of Orthotropic Box Girder (OBG) and SAS Tower at Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China.

The QA Inspector has randomly observed the following activities on these Bays mentioned below;

Bay 2: 77 and 114M Tower Mock-ups, Plate Cutting, Rolling
This QA Inspector observed 114M Tower Mock-up was having 5 workers outside the mock-up loosening bolts and nuts of tower splice connector plate. This Inspector noted ZPMC personnel trying to loosen and remove those bolts and nuts installed on this mock-up. Cutting machine has no Caltrans job on the table at the moment so with rolling machine. On horizontal milling machine, one 75mm thick tower diaphragm plate with mark SA301 was seen in the machine table and one tower diaphragm marked P306 was seen complete and being checked by ZPMC QC. On mill machine number 2, plates marked P4(3pcs), P236(2pcs) and P402(1pc) all with dimension 60mm thick X 400mm wide and 1100mm long were seen beveling in progress which believed to be skin plate stiffeners.

Bay 3: OBG side/bottom/edge panel:
This QA Inspector observed 5-open rib stiffener side panel SP426-001-001~010 being clamped at gantry #1. In this side panel, the tack welds noted ground/cleaned, fit-up of open rib stiffener to plate acceptable, and paint removed on weld surfaces.

The QA Inspector randomly observed ZPMC welder operators ID Number 048801 and, Liu Zihong ID Number

062447, utilizing the Flux Cored Arc Welding (FCAW) Process in the 2F (Horizontal Fillet) Position with a gantry mounted welding apparatus and ZPMC Weld Procedure Specification (WPS) WPS-B-T-2123-3, to weld 5-open-rib stiffeners to side panels SP414-001-003/004 and SP414-001-007/008 . The QA Inspector randomly observed ZPMC CWI Wu Ming Cai monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 293 amps, 30.7 volts for welder ID# 048801 and 283 amps, 30.9 volts for welder ID# 062447. Travel speed for all welds was randomly observed at 475 millimeters (mm) per minute. The weld parameters appeared to comply with contract requirements.

The QA Inspector randomly observed ZPMC welder Li Zhaoqian ID number 048810, utilizing the FCAW process with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H in the 3G (Vertical Groove) Position with ZPMC WPS WPS-B-T-2233-B-U2-F, to weld groove splice butt joint on W18 X 46 flange to make WT rib stiffener for side panel SP181-001-003/004 and SP181-001-005/006. The QA Inspector randomly observed ZPMC CWI Lu Xiaoying monitoring weld parameters.

Other welding related activities this QA Inspector observed were tack welding/fit-up of 6-rib WT stiffeners to side panel SP195-001-068~079 and 2-rib stiffener to edge panel EP028-001-004/005 using electrode THJ506Fe-1; cutting of W18 X 46 to make WT rib stiffener for SP198, SP191 and SP198 and grinding cut edge at the same time; grinding/cleaning of tack welds on various WT and open rib stiffeners to plate; drilling of 14-24mm diameter bolt holes on open rib stiffener of edge panel EP464 and WT rib stiffener of side panel SP190 and SP195.

Bay 4: Tower Diaphragm
The QA Inspector randomly observed ZPMC welder Gu Cai Hong, utilizing the Submerged Arc Welding (SAW) Process in the 1G Position (Flat Groove) with ZPMC WPS WPS-B-T-3221-B-U3c-S-1, to weld the fill pass in weld joint WSD1-SA317-3B(4B) on Tower Diaphragm Top Plate Sub-Assembly. The QA Inspector randomly observed ZPMC Ye Yong Jun monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 633 amps, 30.5 volts with a travel speed of 490 mm per minute. The weld parameters appeared to comply with contract requirements.

The QA Inspector randomly observed ZPMC welder ID number 053609, utilizing the FCAW Process in the 3G (Vertical Groove) Position with ZPMC WPS WPS-B-T-2233-B-U3-F, to weld groove (bent heavy plate) splice butt joint on Tower Diaphragm ring Sub-Assembly SSD1-SA27-A/B weld number 11A. The QA Inspector randomly observed ZPMC CWI Lvliqing monitoring weld parameters. The weld parameters observed were 212Amps, 26.4Volts and 115 mm/min travel speed, which appeared to comply with contract requirements.

Bay 7: OBG - Floor Beam Sub Assembly:
This QA randomly observed heat straightening of longitudinal panel LD004-001 weld number 001-012 and 011~012 due to welding distortion. Oxy-acetylene was used and less than 650 degree C thermal heat input was implemented following procedure HSR1(B)-1005.

The QA Inspector randomly observed ZPMC welder Sun Gu Zuo ID Number 058100, utilizing the Submerged Arc Welding (SAW) Process in the 1G Position (Flat Groove) with ZPMC WPS WPS-B-T-2221-B-L2c-S-1, to weld the cover pass in plate splice butt joint FB030-001-078/079 floor beam. The QA Inspector randomly observed ZPMC CWI Huang Wen Pang monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 517 amps, 29.5 volts with a travel speed of 437 mm per minute.

The weld parameters appeared to comply with contract requirements.

FCAW fillet welding (2F) was also observed on stiffeners to web plate of floor beam sub-assemblies FB009-002-011 and FB009-002-012. Two ZPMC welders working on these were identified as Hong Shuili ID# 044815 and Lu Long Xian ID# 044786. ZPMC CWI Hu Wei Qing was noted monitoring the parameters. FCAW fillet welding was also observed on welded spacer beam W5.5 X 25.5 inches long for various floor beams FB006-038-017/018 by two ZPMC welder Chen Chun Zong ID# 044824 and Zhang Liang ID# 067036 using WPS-B-T-2132-3. Tack welding/fit-up was continuing on stiffener to web plate of floor beam FB009-008-013/014 and FB009-005-011/012 using 4.0mm electrode TL-508. Minor repairs were also observed on noted porosity on fillet weld of floor beam FB016-006-003 and undersize fillet welds on stiffeners to web plate and flange of floor beam FB003-029 weld numbers 060, 059, 068, 067, 075 and 076. Cutting of access hole on 300mm X 300mm hallow steel diagonal brace using oxy-acetylene for floor beam sub-assembly was also observed.

Bay 8: Tower Diaphragms

The QA Inspector randomly observed ZPMC welder Xu Pei Pei ID Number 050323, utilizing the SAW Process in the 1G (Flat Groove) Position with ZPMC WPS WPS-B-T-3221-B-U3c-S-1, to weld the fill pass on plate butt splices of Tower Diaphragm SSD1-SA270-1B/2B. The QA Inspector randomly observed ZPMC CWI Li Zhijiang, monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 620 amps, 30.8 volts with a travel speed of 475 mm per minute. Weld parameters appeared to comply with contract requirements.

Tack welding on run off tab marked Temp-MUH 09-17 using Excalibur E9018 4.0mm diameter electrode and implementing 1G procedure WPS-B-T-3311-TcP4 and 3G procedure WPS-B-T-3313-Tc-P4 for tower diaphragm ESD1-SA316A/B-12A this QA Inspector observed. The QA Inspector randomly observed ZPMC CWI Shazhi monitoring the weld parameters. The preheat was noted greater than 180 degree C but less than 210 degree C with 188Amps and 23.8Volts.

This QA Inspector observed FCAW fillet welding on stiffener to web plate on longitudinal diaphragms LD010-002-003/004 and LD003-006-003/004 by two ZPMC welders Xie Chen Fu ID# 045236 and Xiao Wen Yuan ID#058482 utilizing WPS-B-T-2331-Tc-P4-F.

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Summary of Conversations:

No significant conversation ocurred today.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

Inspected By:	Lizardo,Joselito	Quality Assurance Inspector
Reviewed By:	Cochran,Jim	QA Reviewer